



Housing California - 2008

Project Specific Utility Allowance Calculator

April 29, 2008

NEHEMIAH STONE

Public Policy

- Tenants should pay about 30% of their monthly income for “housing burden”
- Housing Burden = Rent + Utilities
- From developers’ point of view:
Allowable Rent = Housing Burden
minus the estimated tenant utility bills

Path 1: PHAs' Utility Allowance Schedules:

- Are based on existing housing stock with an average age of ~28 years, and that
 - Is Not energy efficient
 - Is Not even up to current standard practice
- Rely on HUD's Utility Allowance Guidelines (circa 1998)

“PHA” is the local public housing authority.

Path 1: PHAs' Utility Allowance Schedules:

- For those reasons, standard UAs from the PHAs:
 - a. Cannot account for energy efficiency upgrades or PV
 - b. Over-estimate tenants' utility costs
 - c. Artificially lower developers' net monthly income
 - d. And therefore, act as a disincentive for developers to invest in EE or PV

Path 2:

Utility Cost Estimates from the Local Utility

- **Raise your hand if you have seen one of these in California!**
 - **Seriously! Anyone?**
- **What if your property is served by separate gas and electric utilities?**
- **Even if you *did* get an IOU estimate under the current process, it is *still* supposed to be based on existing housing stock**

***How Much Would a Developer
Invest In EE and PV
if He or She Was Allowed
to Make a Return
on His or Her Investment?***

Simple Answer:

More than s/he is investing now!

How Much Would a Developer Invest In EE and PV

Detailed Example Answer (step 1):

		Based On:	
		Reality	PHA's UA Schedule
	Annual Income	\$ 36,000	\$ 36,000
	Monthly Income	\$ 3,000	\$ 3,000
Public Policy	Housing Burden	\$ 900	\$ 900
	Utility Costs	\$ 35	\$ 50
	Net Rent	\$ 865	\$ 850
		Actual Utility Costs	\$ 35
		Actual Housing Burden	\$ 885

How Much Would a Developer Invest In EE and PV

Detailed Example Answer (step 2):

	<i>Based On:</i>	
	<i>Reality</i>	<i>PHA's UA Schedule</i>
Annual Income	\$36,000	\$36,000
Monthly Income	\$3,000	\$3,000
Public Policy Housing Burden	\$900	\$900
Utility Costs	\$35	\$50
Net Rent	\$865	\$850
Actual Utility Costs		\$35
Actual Housing Burden		\$885

Monthly Difference for One Apartment	\$15
Annual Difference for One Apartment	\$180
Annual Difference for 50 Unit Apartment Building	\$9,000
Amount of Inital Investment Enabled by \$9000/year Assuming a 6% 15 Year Loan	\$87,410.24

Project Specific Utility Allowance Calculator

PSUA Tool

- **User:**
 - Enters data from building modeling software and PV model
 - Selects appropriate utility company and tariff for project site
 - Enters data on lights and appliances
 - Describes other relevant features
 - Will typically be a CABEC member

Start New Project

Instructions

UTILITY Allowance Calculation Tool

Data Input

Admin

Calculated Output

Project Name

QC Check

Print Signature Form

Print Detailed Report

Project Info **Utility Info** Apartment Details ACM Cooling ACM Heating ACM DHW Lighting Appliances CEC-PV Electric End-Use Summary Gas End-Use Summary

Electric Utility: Electric Territory: Tariff Type:

Gas Utility: Gas Territory:

Heating Fuel:

Water Heating Fuel:

Cooking Fuel:

Trash Rate Type: Trash Flat Monthly Rate:

Water Rate Type: Water Flat Monthly Rate: Water S/Gallon:

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Edit Apartment Rooms

Input Apartments Inventory

Apartment Configuration	# Affordable Housing Units	# Market Rate Housing Units	High Efficacy Lighting
Studio	2	1	<input checked="" type="checkbox"/>
One Bedroom	1	0	<input type="checkbox"/>
Two Bedroom	1	0	<input type="checkbox"/>
Three Bedroom	1	0	<input type="checkbox"/>
Four Bedroom	1	0	<input type="checkbox"/>
Five Bedroom	1	0	<input type="checkbox"/>
Six Bedroom	1	0	<input type="checkbox"/>

Record: 1 of 7



Start New

UTILITY Allowance Calculation Tool

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Electric Utility

PG&E

Electric Territory

P

Tariff Type

CARE

Gas Utility

Propane

Gas Territory

Heating Fuel

Propane

Water Heating Fuel

Propane

Cooking Fuel

Propane

Trash Rate Type

Not Paid by the Tenant

Trash Flat Monthly Rat

\$0.00

Water Rate Type

Usage rate

Water Flat Monthly Rat

\$0.00

Water \$/Gallon

\$0.001100

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Lighting Daily Wh by Room Types

Users will not be allowed to change lighting assumptions data since the potential differences won't be significant. However, users can edit the number of rooms by apartment type. See Apartment Details tab for instructions.

Apt Type	Qty	High Efficacy	Bdrms	Baths	Kitch	Dining	Living	Lndry	Total Daily (Wh)
Studio	3	<input checked="" type="checkbox"/>	130	198	620	0	69	0	1017
One Bedroom	1	<input type="checkbox"/>	660	240	770	0	180	0	1850
Two Bedroom	1	<input type="checkbox"/>	1320	240	770	180	180	0	2690
Three Bedroom	1	<input type="checkbox"/>	1980	480	770	180	180	0	3590
Four Bedroom	1	<input type="checkbox"/>	2640	480	770	180	180	0	4250
Five Bedroom	1	<input type="checkbox"/>	3300	720	770	180	180	25	5175
Six Bedroom	1	<input type="checkbox"/>	3960	720	770	180	180	25	5835



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Input Apartments Appliances

Apartment Configuration	All Energy Star	Washer	Washer Energy Star	Dryer	Dryer Fuel	Dish Washer	Dish Washer Energy Star	Refrig	Refrig Energy Star
Studio	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Electric	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
One Bedroom	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Electric	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Two Bedroom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Three Bedroom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Four Bedroom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Five Bedroom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Six Bedroom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Record: 1 of 7



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ACM Cooling Monthly kWh Usage

Instructions: You must enter your apartment configuration under the "Apartment Details" tab before you enter the ACM data. For each apartment type, please average usage across all apartments of the type and enter the monthly usage in the appropriate row. For EQuest users, cooling includes: Space Cool and Heat Rejection.

Apartment Type	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Studio	1	2	3	4	5	6	7	8	9	10	11	12
One Bedroom												
Two Bedroom												
Three Bedroom												
Four Bedroom												
Five Bedroom												
Six Bedroom												

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Please enter each system as separate record (row).

CEC-PV Monthly KWH Output

Please enter output from CEC's NSHP PV Calculator by month.

Installed System	Common Load Percent	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
System 1	0	5	6	3	4	0	5	0	0	0	0	0	0
*	0	0	0	0	0	0	0	0	0	0	0	0	0



PSUA Tool

- **Program will:**
 - Provide utility cost estimates for all tenant paid utilities (including water)
 - Adjust for Energy Star appliances
 - Adjust for “all high efficacy lighting”
 - Account for the developer’s choice of how to allot PV energy to tenants vs. common area

PSUA Tool Output

- **Program will:**
 - **Print out a utility cost table with estimates for each apartment type in the project**
 - **Print out a table of user's inputs for the plan checker to verify**
 - **Provide a letter to be signed by:**
 - **Energy consultant**
 - **Developer**
 - **Utility's program plan checker**
 - **Utility's program manager**

Microsoft Access - [Projects]

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kWh and kBtu Usage by Apt. & End Use

kWh Usage by Apartment Type By End Use Summary

Apt Type	End Use	Daily Total	Annual Total	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Studio	Cooking	1.54521	564	47	47	47	47	47	47	47	47	47	47	47	47
Studio	Cooling	0.2137	78	1	2	3	4	5	6	7	8	9	10	11	12
Studio	DHW	0.03288	12	1	1	1	1	1	1	1	1	1	1	1	1
Studio	Dishwasher	0.09863	36	3	3	3	3	3	3	3	3	3	3	3	3
Studio	Dryer	0.98630	360	30	30	30	30	30	30	30	30	30	30	30	30
Studio	Heating														
Studio	Lighting	1.017	371.205	31.527	28.476	31.527	30.517	29.466	28.415	27.364	26.313	25.262	24.211	23.160	22.109
Studio	Plug Loads	2.46575	900	75	75	75	75	75	75	75	75	75	75	75	75
Studio	Refrigerator	1.08493	396	33	33	33	33	33	33	33	33	33	33	33	33
Studio	Washer	0.06575	24	2	2	2	2	2	2	2	2	2	2	2	2

Microsoft Access - [Projects]

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kBtu Usage by End Use Summary

Apt Type	End Use	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Studio	Cooking	0	0	0	0	0	0	0	0	0	0	0	0
Studio	DHW	2	2	2	2	2	2	2	2	2	2	2	2
Studio	Dryer	0	0	0	0	0	0	0	0	0	0	0	0
Studio	Heating	4	4	4	5	5	5	6	6	6	7	7	7
One Bedroom	Cooking	0	0	0	0	0	0	0	0	0	0	0	0
One Bedroom	DHW												
One Bedroom	Dryer	0	0	0	0	0	0	0	0	0	0	0	0
One Bedroom	Heating												
Two Bedroom	Cooking	0	0	0	0	0	0	0	0	0	0	0	0
Two Bedroom	DHW												
Two Bedroom	Dryer	0	0	0	0	0	0	0	0	0	0	0	0
Two Bedroom	Heating												
Three Bedroom	Cooking	0	0	0	0	0	0	0	0	0	0	0	0



Update on PSUA Status

PSUA Tool

- **Work is being ...**
 - **Funded by the CEC**
 - **Performed by KEMA Services Inc.**
 - **Reviewed by the AHAC, utility program managers, energy consultants, developers, and others**
 - **Coordinated with TCAC**
 - **Coordinated with HUD representative**

Review Schedule

- **Beta Version reviewed in November by seventy reviewers**
- **KEMA reviewed comments with CEC**
 - **Made many simple modifications**
 - **Working with CEC on work authorization for more substantial improvements**
- **Expect work to resume mid-May, new review version to be available mid-June, and final version to be ready July/Aug.**

Contact Information for PSUA

- Nehemiah Stone
 - nehemiah.stone@us.kema.com
- Sandy Miller
 - smiller@energy.state.ca.us

Questions?

NOTE:

All three PowerPoint Presentations will be available at:

<http://www.h-m-g.com/multifamily/AHEEA>